Masterclass # 11

How to get your paper accepted at T4E 2023?
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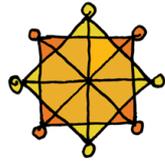
July 1, 2023 | 3 PM (IST)

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Who We Are

EdTech Society is a professional association **started in India**

by individuals who are **committed to improve instruction and learning through the use of educational technologies.**

EdTech Society members are researchers, developers and practitioners in the field of educational technology.

Bringing together Education, Technology and Community

https://etsociety.org/

EdTech Society   **T4E conference**

https://etsociety.org/t4e2023/

T4E - Technology 4 Education

- Technology **for** education:**Tools** to support learning
- Technology **of** education: Understanding the **processes** in learning
- Technology **in** education: Using technology to **support** learning
- Technology **across** education: Using technology to enhance **access** to education

T4E 2023

11th Edition - Organized by EdTech Society, technically co-sponsored by IEEE. Papers will appear in IEEE Xplore. Some T4E papers have high citations.

Has multiple tracks -

1. Research studies
2. Practitioner research
3. Industry research

4. Hands-on Workshop
5. Best Practices - Teaching
6. Products- Tools demo

Resources

https://www.et.iitb.ac.in/products/handbooks

Guidelines and Templates for Planning Conducting and Reporting Research in Educational Technology

A good handbook for researchers in the area of Educational Technology. It highlights the 3 stages of research and the corresponding templates with details per each template including the criteria at each stage.
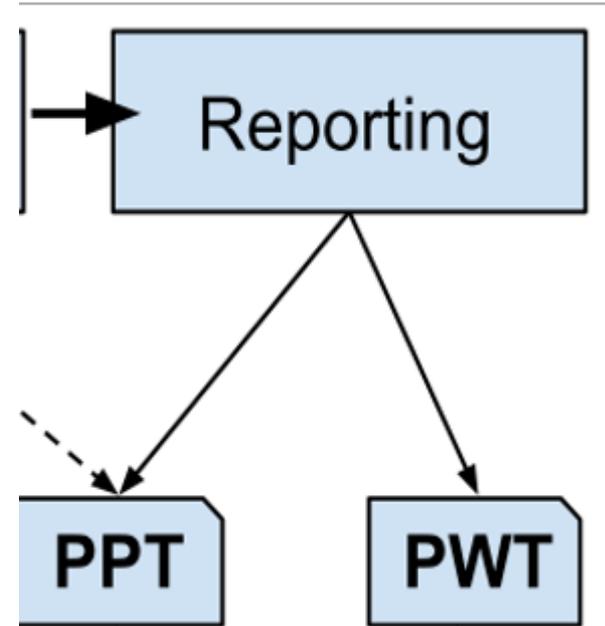
Know more

This session

![EdTech Society]
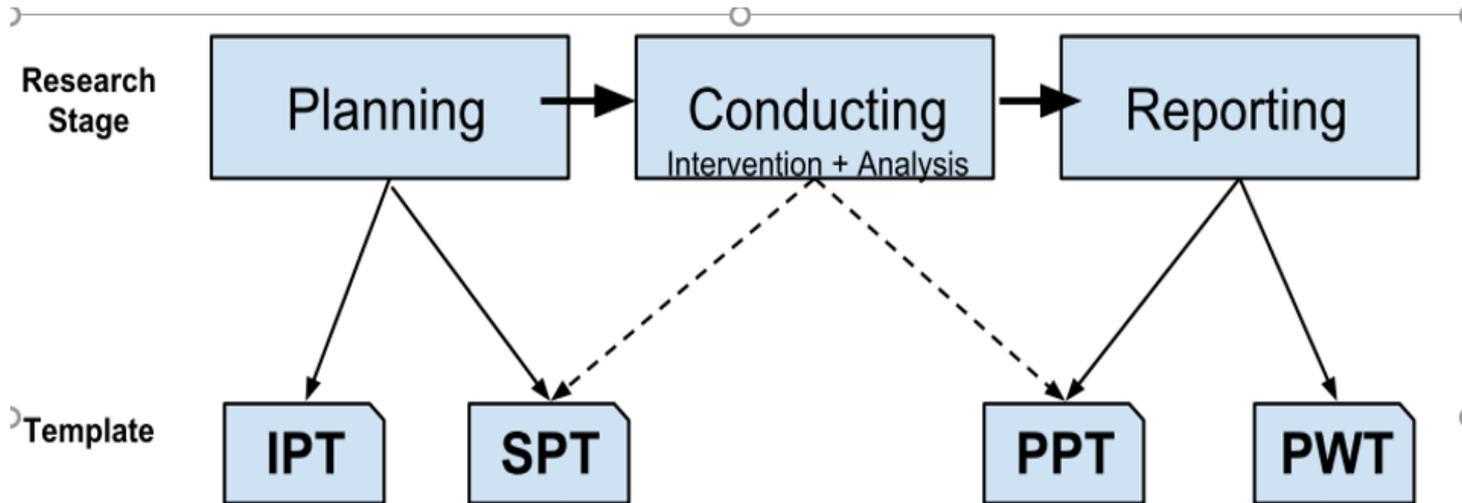
T4E 2023 - Important Dates

- Abstract submission deadline - July 10th
- Paper submission deadline - July 17th

So, this session is on Reporting your work -
- Look at PWT - paper writing template

To write a research paper - we need to know

1. **Whether our work fits in the category of research for that conference**
   - Maybe some other category, such as teaching best practices or tools demo, is a better fit for our work

1. **What do referees expect in our paper**
   - We need conceptual understanding of what is important to include

1. **How to structure our paper**
   - We need procedural understanding of how much to write about what part of our work

Part 1 - Is my work ET research?

1. Is this a research paper?

In my course I explain the importance of the topic prior to teaching. I also explain its practical applications and its usefulness and linkage to the industry. I use PPT presentation and white board equally for an effective lecture delivery. This method will make the lecture clear to students. My idea is working because I can read the happiness on students' faces.

Ans: No

1. Why not?

Compilation of obvious or known solutions is NOT a research paper;
A report of the strategy that you implemented is NOT a research paper;
even though the idea may have value as an effective teaching strategy.

To be considered as an acceptable research paper:

you need details that show why your strategy is unique;

you need to establish evidence that the idea works.

2. Is this a research paper?

I prepared interactive multimedia content and animated videos. Using Moodle LMS, the student can access the content in order to make interactive session. Animated videos will be persisted in their mind. The concept will be easily understandable. Students said that they liked the course.

Ans: Not yet

2. What more is required?

Use of an ET tool in a routine manner is NOT a research paper.
you need to implement an innovative method of using the tool to achieve a teaching-learning goal.

Mere development of instructional material is NOT a research paper, even if the material is based on an innovative idea.
you need to show that the material has resulted in improvement in student learning or engagement, beyond saying 'students liked it'.

3. Is this a research paper?

I developed an App to answer students' doubts. Students can post their queries, respond to other students and get clarification from the instructor. My App is developed in Python and integrates ChatGPT. Students said that they found the App useful.

Ans: Almost

3. What more is required?

Simply reporting the development of an App is NOT a research paper. you need to establish that your App is required, i.e., a similar App does not already exist for the same goal, or that your App is an 'improvement'.

In all the these examples,
After you have established that your idea is novel and not already known, you need to do a carefully designed study with appropriate use of research methods to support your stated results.

Reflection Spot

Think about the work that you want to submit to T4E 2023

Choose your option: Does your work qualify as research? *Yes / No*.

1. Yes, my work may be a research paper.
   - I have implemented a novel idea and have done a careful study to show its effectiveness for the chosen goal.

2. No, my work does not look like a research paper now.
   - I am missing some pieces that may required for it to qualify as research

What now?

If you chose **option 1:** Yes, my work may be a research paper.

- Pay careful attention to Part II and Part III of this session.

If you chose **option 2:** No, my work does not look like a research paper.

- Look at the other tracks - Teaching best practices or Tools demo.
- Pay attention to Part II and Part III of this session for writing it up.
- Use the Study planning templates in the Resources to carry out your study and submit a research paper to next T4E.

Part 2 - What do referees expect?

Here is a review of one of my papers

The referee's job is not to pat you on the back, but to find holes in your paper!

That's how the rigor in research is maintained.

Review 1	
Discussion of related work	4: (covers key related work; its relationship to submission is described, but could be extended further) To the best of my knowledge, the area of software design verification has not been studied in the CER community by other teams than the two teams mentioned in the literature review. I am worried, however, about the fact that the authors do not relate their research to the body of literature cited in the introductory section other than by a single reference at the end of section 6 (to the work of Koenemann and Robertson).
Theoretical basis for the paper	4: (theoretical basis presented, with some citations and argument for how it is applied in the research) The authors contextualize their research both from a subject-matter perspective as well as regarding their research design.
Research methodology	3: (research approach and/or methods appropriate but there are flaws in applying them)
Data collection and analysis methods	5: (exemplary presentation of data collection and analysis methods with excellent argumentation of the choices.)
Discussion of results and conclusions	3: (plausible interpretation of results)
Rationale for ratings of methodology, research methods, results, and conclusions.	The results, as discussed, are plausible and internally consistent. However, I see a major threat to validity in that the observations are neither compared to experts' profiles nor related to the literature. As submitted, the paper describes behavior extrapolated from data collected in a meticulous way. This is internally consistent. As the paper claims to explore _learners'_ cognitive processes, I would have expected to see this data contrasted with experts' cognitive processes, in particular, as the authors had access to domain experts. The classification, as done in this paper, stems only from the fact that the subjects in the study failed to solve tasks that experts could solve. While this may be a proper definition of "novice" in other contexts, the paper would have benefited tremendously from identifying where the processes are different. For instance, it could very well be that the experts would also construct rules and match the system against these rules but that the novices (n=2) simply had issues with Boolean logic. As no demographics are given, this is guesswork on my side, of course. On the other hand, knowing more about the students, e.g., whether they had seen similar tasks before, would aid understanding of the study's implications. As a side remark, I was surprised to see the arrows in the sequence diagram for scenario 2 being annotated with "return true" in both branches. While technically correct, this is very likely to have led to the "lack of simulating state change of variable" discussed in section 6.2.4. Related to this, I am wondering whether the students had seen a mutator-type method (lock/unlock) return the new state prior to being part of this study. Put differently, I am wondering whether this design was introduced for the purpose of this study only and - if so - based upon which considerations this was done.
Contribution and relevance to the international computing education research field	3: (minor contribution to computing education research or contribution is bound to a local context, perhaps with the promise of more to come) For me, one contribution of this paper lies in addressing an area of relevance to the CER community that has been neglected so far. The other contribution is an hypothesis about how novices (under some definition of this term) approach a verification task; this hypothesis states that - unlike experts - novices perform unnecessary refinement steps of their model of the part of the design to be verified based upon design aspects of the general model potentially unrelated to the verification task at hand. Unfortunately, we do not know whether this is the only difference - or the one that matters most.
Writing and expression	5: (well written and expressed)
Suggestions or other comments	
Overall evaluation	4: (Weak accept) This is a study on an important field that has been overlooked for way too long in computing education research. I am concerned about the missing links to experts' cognitive processes but certainly see the contribution of the work "as is".

T4E review criteria (2018)

Criteria	Description	Scores
Overall evaluation	Please provide a detailed review, including comments and a justification for your scores. This review will be sent to the authors. This field is required.	Reject/ Weak reject/ Borderline/ Weak accept/ Accept
Relevance	How relevant is the submitted paper with respect to the conference themes?	Very poor / Poor/ Fair / Good/ Excellent
Originality	How original or distinctive would you rate the work?	Very poor / Poor/ Fair / Good/ Excellent
Positioning of research	Is the paper situated in an appropriate research context? Does it contain suitable references? Is the work in the paper analyzed in relation to prior work?	Very poor / Poor/ Fair / Good/ Excellent
Research significance	How significant is the research contribution?	Very poor / Poor/ Fair / Good/ Excellent
Technical quality	Are the methodologies/ procedures/ experiments sound?	Very poor / Poor/ Fair / Good/ Excellent
Form - Organization and readability	Are the arguments made coherently? Is the paper organized logically?	Very poor / Poor/ Fair / Good/ Excellent
Form - Grammar and style	Are syntax, vocabulary and spelling correct?	Very poor / Poor/ Fair / Good/ Excellent

What do referees look for?

Referees look for	Your paper must have
Significance/ Relevance	Well-motivated problem that is connected to the conference scope
Novelty	Analysis of prior work to show that your idea is unique
Positioning	Analysis to show that your work is required, how your work advances the state of the art
Soundness of procedure	Steps to show that you have implemented solution carefully
Evidence to support claim	Data to show that your solution works as claimed
Overall coherence	Consistency between parts of your paper – treatment should address problem, results should give answer to problem

What is Significance / relevance?

- Relevance
  - Does your work really fit what the conference is about?
  - Is your work within scope?
    - Read the Call for Papers carefully

- Significance
  - Does your work add value to the area?
    - Argument to show how it is *interesting* or that it challenges or enables different ways of thinking

What exactly is meant by Novelty?

.Dictionary: "The quality of being new, unique, original, innovative, or unusual".

What has to be novel? à At least **one** of the below:
- Your Problem – Research Question(s).
- Your Solution – Strategy to solve a known problem.
- Your Domain – Adapt a known solution to your context

Strong to Weak

Can a non-innovative strategy be developed into a research paper?
- Yes, **provided** it is positioned well (See next slide).

What exactly is Positioning?

Dictionary: "situation/relation with respect to others".

How to do positioning? → Do **both** of the below:

1. Have you shown analysis of *related* prior work to bring out the gaps?
   a. papers that have addressed a problem similar to yours
   b. papers that have a solution approach similar to yours

2. Does your solution address any of the gaps above?

As the novelty of your problem or solution decreases,
the accuracy of your positioning must increase!

Explain the relation to related work clearly

Awful	The galumphing problem has attracted much attention [3,8,10,18,26,32,37]
Bad	Smith [36] and Jones [27] worked on galumphing.
Poor	Smith [36] addressed galumphing by blitzing, whereas Jones [27] took a flitzing approach
Good	Smith's blitzing approach to galumphing[36] achieved 60% coverage [39]. Jones [27] achieved 80% by flitzing, but only for pointer-free cases [16].
Better	(Good Above) + We modified the blitzing approach to use the kernel representation of flitzing and achieved 90% coverage while relaxing the restriction so that only cyclic data structures are prohibited.

Source: Mary Shaw, Writing good Software Engineering Research Papers, ICSE 2003

What is Soundness of Procedure?

If you have already conducted the study, think about:

- What are your claims regarding your solution (intervention / tool)?
- Do you have results / evidence to back up these claim?
- Could be other reasons for these results, instead of your solution?
    - If it is not too late, go back and modify the study to rule out these reasons.
    - Else, at least write these reasons in the limitations section of your paper.

If you are yet to conduct the study:

- See the Guidelines mentioned earlier for more details.

What is Evidence to Support Claim?

The data that you gather should be in sync with the goal of your study.

Some common metrics are:
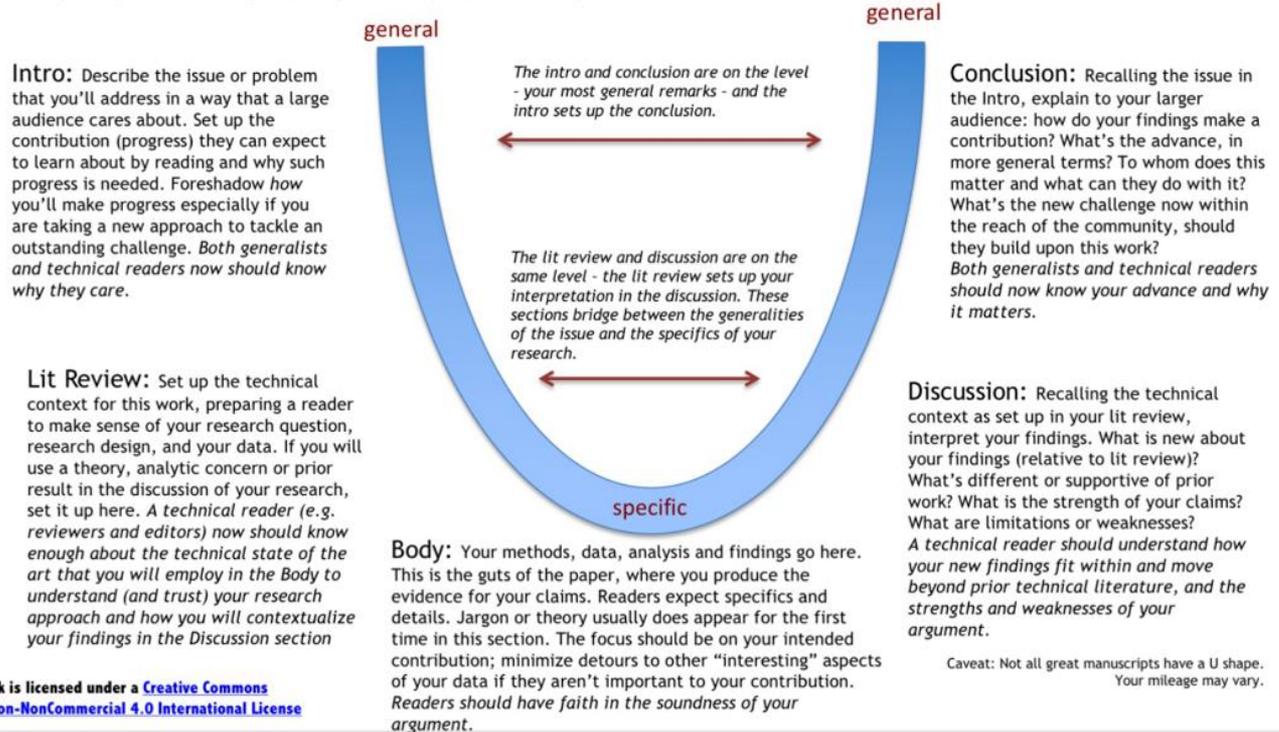
- Learning Effectiveness – student performance
- Engagement – student interest, satisfaction

Learn how to measure these - See the Guidelines mentioned earlier for details. Register for a research methods in ET course

The analysis that you perform on the data should be the evidence that forms the basis of your claims. This should be a large part of your paper.

What is Coherence of work?

The Center for Innovative Research in **Cyber**Learning

"U is a beautiful shape for your journal article"
Jeremy Roschelle (@roschelle63), Prepared for Cyberlearning '16

In my experience as an Associate Editor of the Journal of the Learning Sciences, many authors are unsure of how to use the structure of their manuscript effectively – and thus end up repeating themselves in four sections, the introduction, literature review, discussion, and conclusion. Thinking of your manuscript as having a U shape can help. The paper "rests" on the bottom of your U – the body of your paper – and reaches towards its audience on the sides. The journey in the manuscript is from general to specific and back again.

general

general

Intro: Describe the issue or problem that you'll address in a way that a large audience cares about. Set up the contribution (progress) they can expect to learn about by reading and why such progress is needed. Foreshadow *how* you'll make progress especially if you are taking a new approach to tackle an outstanding challenge. *Both generalists and technical readers now should know why they care.*

The intro and conclusion are on the level – your most general remarks – and the intro sets up the conclusion.

Conclusion: Recalling the issue in the Intro, explain to your larger audience: how do your findings make a contribution? What's the advance, in more general terms? To whom does this matter and what can they do with it? What's the new challenge now within the reach of the community, should they build upon this work?
Both generalists and technical readers should now know your advance and why it matters.

The lit review and discussion are on the same level – the lit review sets up your interpretation in the discussion. These sections bridge between the generalities of the issue and the specifics of your research.

Lit Review: Set up the technical context for this work, preparing a reader to make sense of your research question, research design, and your data. If you will use a theory, analytic concern or prior result in the discussion of your research, set it up here. *A technical reader (e.g. reviewers and editors) now should know enough about the technical state of the art that you will employ in the Body to understand (and trust) your research approach and how you will contextualize your findings in the Discussion section*

Discussion: Recalling the technical context as set up in your lit review, interpret your findings. What is new about your findings (relative to lit review)? What's different or supportive of prior work? What is the strength of your claims? What are limitations or weaknesses?
A technical reader should understand how your new findings fit within and move beyond prior technical literature, and the strengths and weaknesses of your argument.

specific

Body: Your methods, data, analysis and findings go here. This is the guts of the paper, where you produce the evidence for your claims. Readers expect specifics and details. Jargon or theory usually does appear for the first time in this section. The focus should be on your intended contribution; minimize detours to other "interesting" aspects of your data if they aren't important to your contribution. *Readers should have faith in the soundness of your argument.*

Caveat: Not all great manuscripts have a U shape. Your mileage may vary.

Example 1. How we teach impacts student learning: Peer Instruction vs. Lecture in CS0 (programming course), *SIGCSE 2012*

Novel solution approach

Precise problem description

Sound procedure

We look at the impact on student learning of the pedagogical approach in which a class is taught. We compare two sections of a non-majors programming course offered in the same term, by the same instructor, covering the same content and utilizing the same book, labs and exams. One section was taught using standard lecture practices including lecture from slides, live coding and weekly quizzes. The other section was taught using the Peer Instruction (PI) method that actively engages students in constructing their own learning, instead of absorbing understanding from the instructor's explanations. Using a factorial analysis of variance, we find that students in the Peer Instruction section score an average 5.7% higher than in the standard lecture practices section in the final exam.

Evaluation of solution

Example 2. Improvement of Mental Rotation Ability using Blender 3-D, *T4E 2012*

Analyzing gaps in related work

Importance of problem

Novel solution approach

Mental Rotation (MR) ability is important in various fields ranging from art and education to engineering and technology. MR ability can be improved by computer based training. Most existing techniques require weeks of training and are based on proprietary software. We developed a three-hour training module using Blender, an open source software. In this paper, we present experimental details of the effect of our training on the improvement of MR ability. Our sample was 42 first year engineering undergraduate students and we used Vandenberg's Mental Rotation Test for pretest and post-test. We found the results to be significant, leading to a large effect size for the entire sample. We also found that females and low achievers are more likely to benefit by such training.

Sound evaluation

Evidence in support of solution

How do I ensure that my research meets the referee's criteria?

Use the [Resources](#) mentioned earlier.

1. Idea Proposal Template (IPT) - helps you explore if your idea is suitable for a research study.

2. Study Planning Template (SPT) - helps you plan the research study around your idea.

3. Paper Planning Template (PPT) – helps you plan the flow and ideas that will go into your paper.

4. Paper Writing Template (PWT) – helps you plan the paragraphs that will go into your paper.

Part 3 - How to structure the paper?

Write the Abstract - Convey the idea

Here is a problem – 1 line

It's an interesting problem - 1 line

[Here's how other people have approached it, yet …] - 1 line

It's an unsolved problem – 1 line

Here is my idea – 1-2 lines

Here's why my idea works (details, data) - 1-2 lines

This is my key contribution - 1 line

[adapted from slides by Simon Peyton Jones:
Video - https://www.microsoft.com/en-us/research/academic-program/write-great-research-paper/
Slides -https://studylib.net/doc/14197956/how-to-write-a-great-research-paper-simon-peyton-jones-mi...]

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Write the Introduction - expand the abstract

Here is a problem, It's an interesting problem – 1 para

Here's how other people have approached it; yet it's an unsolved problem - 1 para

Here is my idea and briefly why it works – 1 para

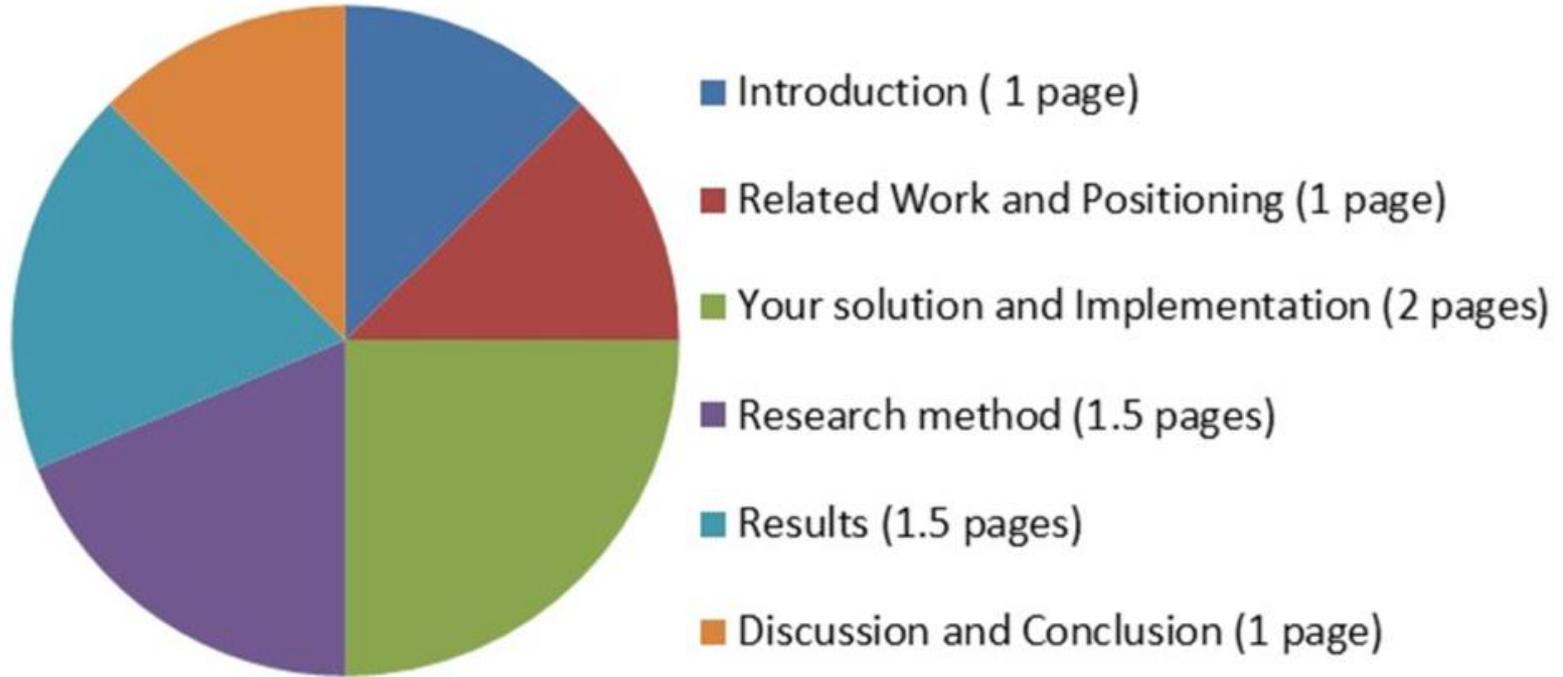This is my key contribution - 1 para

Write the paper

First write a short paper (~4 pages)

- Expand the introduction - each para to a section
- Plan your real-estate -
  - how much space for each section?
  - Draw boxes on a sheet of paper and give section headings

Then, write the full paper, if you still have more to say

- It may be easier to expand sections rather than reducing page length after writing everything
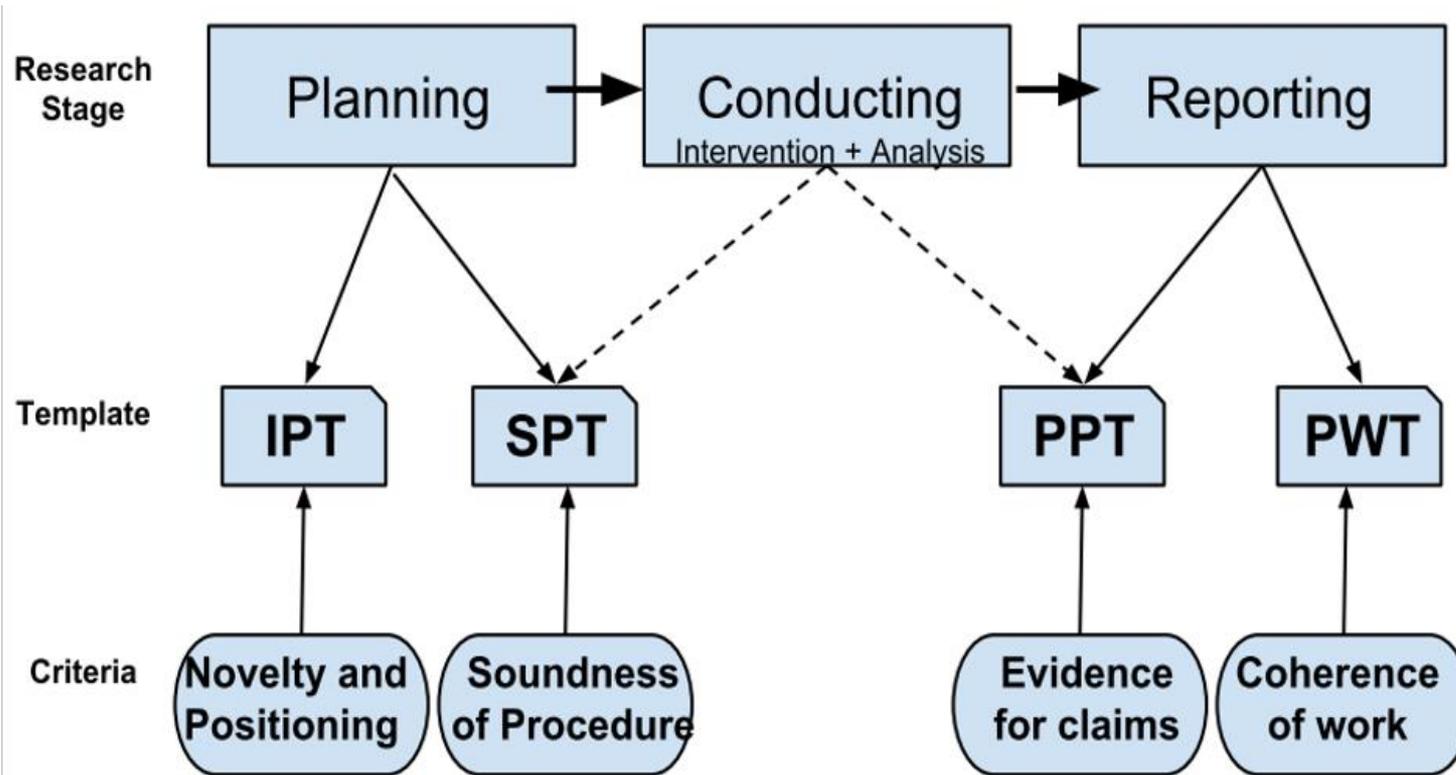
**Proportion for each section
Assuming 8-pages**

- ■ Introduction (1 page)
- ■ Related Work and Positioning (1 page)
- ■ Your solution and Implementation (2 pages)
- ■ Research method (1.5 pages)
- ■ Results (1.5 pages)
- ■ Discussion and Conclusion (1 page)

Conclusion

Which template to use at what stage?

Quick reference version of resources

1. Go to my webpage - **Google - Sridhar Iyer, IIT Bombay**

1. Click on Papers -
2. Read - [Guidelines and Templates for Planning, Conducting and Reporting Educational Technology Research](#)

1. Click on Talks -
2. Go through - [Tutorial: Guidelines for Planning, Conducting and Reporting ET Research](#)
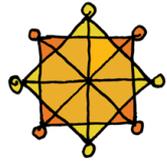
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